



## ***Technology Demonstration Summary Sheet***

### ***Remotely Operated Scabbler Decontamination***

#### **THE NEED**

The decontamination of radioactively contaminated concrete is a concern during the decontamination and decommissioning (D&D) process. The primary decontamination objectives are: (1) a reduction in the surface contamination levels to reduce potential personnel and environmental exposure, and (2) the reduction of surface contamination levels to meet DOE Order 5400.5 for unrestricted use.

#### **THE TECHNOLOGY**

Pentek, Inc.'s remotely operated scabbling technology, MOOSE<sup>®</sup>, is designed to scarify large concrete floors and slabs. The MOOSE<sup>®</sup> scabbler is comprised of three integral sub-systems: the scabbling head assembly, the on-board HEPA vacuum system, and the six-wheeled chassis. The scabbling head houses seven independent reciprocating tungsten carbide-tipped bits with the pistons being driven by compressed air. Dust and debris are captured by the two-stage positive filtration HEPA vacuum system that deposits the waste directly into an on-board 23-gallon waste drum. Independent skid steering allows the MOOSE<sup>®</sup> to pirouette 360 degrees about its geometric center.



**Pentek MOOSE<sup>®</sup>**

#### **THE DEMONSTRATION**

This demonstration tested the Pentek, Inc. MOOSE<sup>®</sup> technology for its ability to decontaminate approximately 620 square feet of concrete flooring by removing concrete up to 1/4-inch. The testing was performed on the service floor of the Argonne National Laboratory, Chicago Pile 5 (CP-5) facility as part of the Large Scale Demonstration

Project funded by DOE's Federal Energy Technology Center.

#### **THE RESULTS**

The MOOSE<sup>®</sup> successfully removed a nominal 1/8-inch of concrete from 618 ft<sup>2</sup> of floor area with a production rate of 130 ft<sup>2</sup>/hr for a two person crew. Operated remotely via a 50-ft power and control tether, the operator and control panel were able to be located outside the demonstration area, where the operator could work without the need for PPE. Because of the confined geometry of the floor, a second operator was required to remain inside the demonstration area, where he could be closer to the MOOSE<sup>®</sup> to manage the tether and air-hose. The MOOSE<sup>®</sup> proved to be very maneuverable and easy to operate. Radiological contamination in the area prior to the demonstration included hot spots ranging from 1,000 dpm/100cm<sup>2</sup> to 105,000 dpm/100cm<sup>2</sup> fixed beta/gamma. After the demonstration, all but one hotspot in areas scabbled by the MOOSE<sup>®</sup> were at or below background levels. The remaining hotspot was reduced from 105,000 to 3,500 dpm/100cm<sup>2</sup>. The MOOSE<sup>®</sup> was capable of scabbling within 6-inches from walls.



**Scabbling bits for Pentek MOOSE<sup>®</sup>**

#### **CONTACTS**

- Dick Baker, Project Manager, U.S. Department of Energy, Chicago Operations Office, (630) 252-2647.
- Steve Bossart, D&D Focus Area Manager, Federal Energy Technology Center, (304) 285-4643.
- Terry Bradley, Alliance Administrator, Duke Engineering & Services, (704) 382-2766.
- Sue Madaris, D&D Project Manager, HCET at Florida International University, (305) 348-3727.
- Linda Lukart-Ewansik, Chief Financial Officer, Pentek, Inc., (412) 262-0725.